

pure yellow and edible fruit. Under this species I said in fall of 1901, 'large yellow fruit, just getting ripe, acid, good to eat.' The type tree is in low woods seven miles west of Opelousas. *C. crocinna* [sic] is another yellow one ripening its fruit about a month later than that of *C. albicera*. This grows in the same low woods west of Opelousas. *C. edura* and *C. tersa* have red or ruddy fruit, not edible. These trees grow in upland woods and I think the type trees are within half a mile of Opelousas. I am not positive, however, having no record of the number of the type trees. South and east of Opelousas was a large enclosure used for pasture. In this enclosure is where I first found these species. I went along the Railway in the direction of Lafayette half a mile or less and climbed the wire fence and back in this woodland pasture is where I found the trees. There must be some *C. albicera* in the vicinity of Opelousas for I found yellow fruit under a *C. edura* tree and collected it by mistake, afterwards learning from a boy that he and other boys pelted some girls with yellow haws while they were sitting under that tree eating grapes."

Really a yellow-fruited *Crus-galli* species is rare. I certainly never went to this station south of Opelousas which Harbison talks about and I wonder if you have been there. This might be a good place to visit sometime if you want to get material of these Hawthorns.

With best wishes for the New Year, I am,

157

January 16, 1918.

I have been looking at Oaks lately and think that Palmer's 7448 and 7473 Natchitoches are only a large-leaved form of *Q[uercus] nigra*.

*Quercus* 1002, Sardis, is I think *marilandica* × *velutina*, a common hybrid which is not rare & is widely distributed. I think of calling this *Q. Bushii* as it appears to have been first collected by Bush.

Cocks's 4702, Pineville, April 1917, looks like a hybrid between *rhombifolia* and *velutina*. Did you get it again in the autumn? Fruit and mature leaves should be collected. This seems to be quite a new hybrid and looks interesting.

Cocks's Selma 4704. For a guess this may be a *Catesbaei* and *nigra* cross, and to this cross Trelease has given the name of *Q. Walteriana* ined. I am not entirely satisfied with this guess, but *Catesbaei* is surely one parent.

Have you ever made that trip to the Chandeleur Islands?

I am sorry to see that you are having very cold weather with snow at New Orleans, and I am afraid there has been a good deal of damage done to plants. This has been the worst winter here I can remember so far as cold is concerned but we have n't had yet much snow. I hope you are well.

158

January 16, 1918.

The Oak Ashe has tried to write you about is his *Quercus rubra* var. *leucophylla*. I enclose a copy of his original description from the Bulletin

of the Charleston Museum.<sup>16</sup> This Oak has long troubled Harbison and me, and I am glad that Ashe has made what seems to be a good disposition of it. The only Louisiana specimens I have seen are Palmer's Natchitoches 7443 and Welsh 8486, Cocks's Mandeville 1787, May 1908, as *Q. pagodae-folia*. I collected it at Lake Charles April 13, 1915, and the only Selma specimen I have seen is Harbison's #20 "in woods west of the city, April 1915."

I never told Ashe that it was the largest tree in the swamps in any part of Louisiana for I have seen very little of it in your state. What I did tell him I think was that it was one of the largest trees in the swamps about River Junction, Florida.

The Springfield tree I am describing as *Q. rhombifolia*. I am glad to know that it holds its leaves later than *nigra*.

How about this evergreen *Q. Phellos* you speak of? Isn't there some mistake, and have you not got hold of *laurifolia* which is evergreen and which has leaves a good deal like those of *Phellos*?

## 159

February 13, 1918.

I shall write you in a day or two at some length about the *Quercus* situation in Louisiana and I am only writing today to call your attention again to your Oak No. 6 from St. Tammany July 1900.

I cannot make anything out of this but *Quercus borealis* and *Q. borealis* is the most northern of the Atlantic Oaks and grows only in very cold regions. If your tree is really this species its presence in Louisiana is beyond my understanding. This is a matter certainly for further investigation and it will be interesting to know if this tree is common.

In my Manual *Quercus Catesbaei* is credited to eastern Louisiana, but there is no specimen from Louisiana in this herbarium. There is no specimen either of *Q. cinerea* from eastern Louisiana where it might be expected. You ought to try and find some sandy region in Louisiana east of the river, for if you can I think you will find growing on it the thick-leaved *Q. virginiana*, *Q. cinerea* and *Q. Catesbaei*.

We have only one specimen of *Q. marilandica* from Louisiana, Palmer's No. 7517. There is no indication that this tree grows in eastern Louisiana and no specimen collected by you. We have no specimen of *Q. Prinus* (*Michauxii*) from western Louisiana, and no specimen of *Q. rubra* (*falcata*) from eastern Louisiana collected by you. We have no specimen of *Quercus lyrata* from eastern Louisiana and none collected by you or me in Louisiana.

It looks to me as if more attention should be paid to eastern Louisiana for the determination of the distribution of Louisiana trees. There does not seem to be any reason why trees growing at Biloxi and Mississippi City should not cross the Pearl River if there is any sandy soil for them to grow in.

<sup>16</sup> ASHE, W. W. Bull. Charleston Mus. 13: 25, 26. 1917.

160

February 15, 1918.

I have this morning your letter of the 11th with specimen of *Quercus*. The twigs to which you refer are not in the package and I suppose will arrive later.

I never heard of the man Neal who has been appointed Superintendent of Audubon Park.

Your evergreen Willow Oak from Sardis is, as I suspected, *Q. laurifolia*. This makes a new tree for that apparently inexhaustible region. *Quercus laurifolia* is one of the best street trees in the world for the southern states and there is no better tree for New Orleans. It is worth going to Jacksonville, Florida, to see the Laurel Oaks which have been planted there.

161

February 15, 1918.

I have your note of the 24th and am now ready to report on the Louisiana Oaks.

*Quercus rhombifolia* I find was used by Riddell for one of his species described in 1853 in the New Orleans Medical Repository, so I have substituted *rhombica* for the new Water Oak.

Post Oaks.

There are two distinct forms of Post Oak, the first with stout tomentose branches and the other with slender glabrous or nearly glabrous branches. To the first group belongs the typical *Quercus stellata* with the upper lobes of the leaves broad and truncate or slightly lobed. To this I refer Palmer's No. 8492, Welsh, and Natchitoches No. 8912. We collected it on March 29th last growing on dry ground near Springfield. Of the form with glabrous branches the most common and widely distributed is the variety *Margaretta* Ashe with usually rounded lobes to the leaves, glabrous above and loose pubescent below, slender reddish branchlets and very close bark. From Louisiana I find only one specimen which seems to belong to this variety, Palmer's No. 9465 from Chestnut, with young leaves only, and a specimen collected by Letterman at Shreveport July 23, 1891. This variety grows at Selma and I am calling the little running Selma Oak *Quercus stellata* var. *Margaretta* f. *stolonifera*.

I propose the name of *Quercus stellata* var. *araniosa* for the Post Oak with scaly bark and loose cobwebby tomentum on the lower surface of the leaves which have both square and rounded lobes. The numbers are Palmer's 8770, Grand Ecore (type), 7518, 8769 and 9446, Grand Ecore; 7978 and 8838, Chopin, and 7361 Natchitoches. I suggest the name *Q. stellata* var. *paludosa* for the Washington trees with scaly bark, making your No. 4734 the type. This variety is distinct in its scaly bark, in the shape of the leaves and in the close tomentum on their lower surface.

I am afraid we must call your Sardis numbers 898, 912 and 940 the Scarlet Oak after all, much as I dislike the idea of a Scarlet Oak growing

so far south. I suggest *Q. coccinea* var. *tuberculata* for it, making No. 898 the extreme form of the type.

On April 4, 1913, we collected in low wet woods west of Opelousas specimens of a large Post Oak with scale bark, hoary-tomentose branchlets and square-lobed leaves covered below with yellowish brown tomentum. You collected probably from the same tree on April 3, 1916 (No. 4022). The mature leaves and fruit of this tree have not been collected. On April 3, 1913, we collected in the same locality what must be another form of Post Oak, also with scale bark, the leaves with square lobes but sparingly pubescent below, and stellate-pubescent, not tomentose, branchlets. You have n't collected autumn specimens from either of these trees, but your Natchitoches specimen, October 1913, a tree with broad lobed leaves, might be the same as the second of these Opelousas Post Oaks, as may be Palmer's Welsh 8491 in low wet woods.

The Post Oaks west of Opelousas should be followed up this year for, with the exception of them and your Pineville hybrid, all the Louisiana Oaks which we have seen are now accounted for. Other hybrids will no doubt be found, and I confidently expect you to send me specimens of *Quercus virginiana geminata* and *Q. laurifolia* as these are common at Mississippi City and should reach the extreme western parishes.

Most of the Louisiana Live Oaks are typical *Quercus virginiana*, but for the little Oak with pale bark and small leaves from the neighborhood of Springfield I am suggesting the name of *Q. virginiana* var. *eximia*. Your 4716 is the type. Other numbers are 4718, 4720, 4722 and 4726.

The Live Oak with strongly reticulately veined leaves revolute on the margins and tomentose below I call *Q. virginiana* var. *geminata*. This has not yet been found in Louisiana but it is so common in southern Mississippi that I am sure you will find it somewhere west of the Pearl River.

*Quercus texana Shumardii* is my name for the Texas Oak with shallow cups with often much thickened scales. It is Palmer's Natchitoches 7442, 8761, 8762 and 9420; Mooringport 9408; Grand Ecore 7522, 9451; Shreveport 9481; Lake Charles 8522; Lake Charles, collected by us April 12, 1915, a tree one hundred and ten feet high. Cocks, East Opelousas, 4020, Richland County, June 21, 1905.

The variety with deeper cup-shaped or turbinate cups I call *Quercus texana* var. *Schneckii*. This we collected on the West Plantation April 14, 1916, on the Fort Plantation (Nos. 1 & 2), April 13, 1916, on the Dessert Plantation April 14, 1916, near Laurel Hill, March 28, 1910. It is Palmer's 8735, Windsor (very typical), Chopin 8835. It is your Richland No. 1915, September 21, 1910, 8935?; and our Monroe, October 8, 1913.

I have no evidence that the variety *Shumardii* grows in Louisiana east of the river, but it is so common in Mississippi and Alabama I should expect to find it there. The typical *Q. texana* has deeply lobed leaves and small acorns with turbinate cups, and is found only on the limestone hills of central and western Texas.

*Quercus nigra* var. *tridentifera*. I suggest this as the name for the Water Oak with leaves distinctly three-lobed at the apex. We collected it April

13th near Laurel Hill and this I consider the type. We also collected it at Lorenger March 30, 1917. You collected it in Audubon Park October 1913, and I collected it probably from the same tree in Audubon Park, March 31, 1917. There is a well-marked small tree of this variety in the fence row by road (right hand side) leading from Selma to Sardis.

*Quercus rubra* var. *leucophylla* Ashe in Bull. Charleston Mus. xiii. 25 (April 1917). To this variety, which has probably been taken, without the fruit having been seen, for *Q. velutina* and sometimes for *Q. pagodaefolia*, I now refer your *Quercus pagodaefolia* (?), Mandeville 1787, May 1908, our Lake Charles, April 13, 1915, Palmer's Welsh 8486, and Natchitoches 7443. This tree needs further investigation for its distribution in Louisiana. The leaves on upper branches are deeply lobed and pale-pubescent on the lower surface, but on lower branches they are less deeply lobed with usually five broad lobes, and are green on the lower surface. Harbison has noticed that the hilum of the seed is pink.

*Quercus rubra* var. *triloba* Ashe is the name of the Spanish Oak with leaves three-lobed at the apex. There is no specimen of this variety here from Louisiana, but as it grows at Biloxi and near Natchez, I should expect to find it in eastern Louisiana. We have very little *Quercus velutina* from Louisiana, only Palmer's specimens from Shreveport and Natchitoches, your West Feliciana 2600, May 15, 1915, your Richland 1, January 1908, and a specimen collected by Mohr at Shreveport November 1880. None of these will pass for the variety *missouriensis* which should be looked for in western Louisiana as it grows at Fulton, Arkansas. I shall be glad of more *Q. velutina* to show its range in the state.

*Quercus Comptonae*. I am giving this name to the Natchez Oak which we think is a hybrid between *lyrata* and *virginiana*. This is your tree which is in Audubon Park and in one of the New Orleans streets. Please give me the name of the street where we saw it.

What do you say to calling your Selma 938 and 814 a *cinerea* and *rubra* cross? To this cross Trelease has given the name of *Q. subintegra*. I have placed it in that group.

*Quercus* 4702. This is probably a *rhombifolia velutina* cross. It is interesting and I should like to see the fruit. This number I hope you will follow up.

Please tell me if this Pineville is across the river from Alexandria. I have tried again to determine Riddell's Oaks in the New Orleans Medical Repository but I can make nothing out of them at all satisfactory. Might not his *rhombifolia* from Alexandria be your 4702?

I don't find Alabama 968, but 938 which is *subintegra* Trelease.

With our present knowledge of Louisiana Oaks it ought to be easy now to find out more about them, and especially about their distribution. I hope you will collect them whenever you have the opportunity. I do not think Richland Parish and the Arkansas border parishes have been sufficiently explored. Can't you manage this? The parishes along the Pearl River also need a careful search. We need specimens of the shrubby

Willow from Louisiana you have spoken to me about. I do not think we have it here.

I shall have another go at the *Tilias* as soon as I have finished *Quercus*.

## 162

February 18, 1918.

The Japanese *Quercus* which they are planting in New Orleans is *Quercus glauca*,<sup>17</sup> a widely distributed species in Japan, China and the Himalayas. It is a very fine tree, of course, but not as good for New Orleans as *Q. laurifolia* which I wish they would plant there. Do you happen to know where they got *Quercus glauca*? I did not know that it was cultivated in the United States.

I suppose that I told you our *Malus* No. 2 from west of Opelousas was *M.* [unpublished binomial for *M. ioensis* var. *creniserrata*]. I believe now that the Louisiana *Malus* situation has been cleared up.

## 163

February 21, 1918.

I am glad to see by yours of the 18th that *Quercus marilandica* and *Catesbaei* grow in eastern Louisiana. I should like to have specimens of all the eastern Louisiana Oaks to show their distribution in the state. This is important with the commonest species, for it is impossible to remember the distribution of every tree without reference to the herbarium.

I should think it possible that you could find *Quercus laurifolia* cultivated in New Orleans. If it is there it would be an indication that it was brought from Eastern Louisiana, for I do not think that there are many nursery grown native Oaks planted in the south.

I am proposing to call the Pineville hybrid which looks very distinct to me *Quercus Cocksii* as there does n't seem to be anything better in Louisiana in the way of an Oak for that name. I hope you will get more material.

I hope about the middle of April to get down to North Carolina for a few days, but I am very much afraid I shall not be able to see you in Louisiana this spring; but you will have enough to do without me.

I have been working for two months on *Quercus* and am now going to take up *Carya* and *Tilia* again.

## 164

March 1, 1918.

*Tilia* 964 Sardis I suppose is what we have called *T. heterophylla*. 1200 Sardis has all the earmarks of *T. americana*, now to be called *T. glabra*, but I hate to believe that this tree grows in Alabama. Still this is not perhaps as remarkable as it is to find *Q[uercus] borealis* in Louisiana.

#1202 looks like 1200, except that the axillary tufts are wanting or

<sup>17</sup> This oak, the commonest species in Japan, has evidently been lost in the New Orleans area.

very small. With these I suppose belong Selma 822 equals 784, 6, 960 and several specimens without numbers collected by you in 1914. Also "Tilia americana," Wakefield, West Feliciana, June 1907, and "Tilia americana" near Alexandria, June 1907. These last should be looked up and more should be known about them.

1204 Sardis seems the same as 1202. 962, 970, 782 and 836 Sardis are all incomplete. 962 and 968 Sardis have loose pubescence on the lower surface of the leaves, that is it is easily rubbed off. I do not know what these are. Young leaves and flowers are desirable.

There is still the tree by the Ferry at Lake Charles to complete. It is our #2 and flowers have not been collected unless your specimens from edge of Lake Charles collected May 10, 1911 but not numbered is that species. Some one has written on the label in pencil "referred to 4740" whatever that may mean. The leaves of this specimen have lost the lustrous bluish colors so conspicuous on the March specimens of #2. I judge that this Ferry tree blooms before the other species as the flower-buds on March 23, 1907 were pretty well developed. I think this must be an undescribed species. It is nearest, perhaps, to *T. nuda* but differs in the lustrous lower surface of the leaves and in its early flowers, for *nuda* seems the last of the Louisiana species to bloom. We badly need flowers and fruit of this tree. There are other #2's about Lake Charles but I do not remember exactly where they are situated. I hope you can manage these this year.

I do not know as it is any use sending Ashe any specimens of unpublished trees. He does n't really want them, that is he does not maintain a herbarium, and it is just as well for him and others to wait until these questions are definitely settled and the descriptions printed.

I hope you will let me hear that you can manage this Lake Charles business.

165

March 4, 1918.

Since writing you about *Tilias* a day or two ago I notice that in your letter of October 20th you say you were sending the Lake Charles Linden from the edge of the lake by the ferry. I do not find this specimen unless it is the one in flower collected several years ago which I mentioned in my letter to you. It is astonishing how much trouble this tree gives us. Please let me know about the specimen mentioned in the letter of October 20th.

166

March 5, 1918.

I enclose leaves of a *Bumelia* collected by Palmer at Beaumont, Texas, which agree with the type of Small's *B. lucida*.

You remember *Bumelia lucida* was credited to Louisiana by Small but I believe you have n't found it there. As it grows at Beaumont [Texas] I should suppose the place to look for it would be in the Lake Charles region.

March 13, 1918.

I have your letter of March 9th. It is hard for me to believe that your mounted specimen "Lake Charles, edge of the lake, May 10, 1911" is the Ferry tree. Notice that the leaves on the mounted specimen are decidedly pale on the lower surface compared with your Lake Charles March 26, 1911, which is green and lustrous below. This is our old No. 2 and I think is still undescribed. The mounted specimen looks to me like a [*Tilia*] *nuda*. We collected #2 March 26, 1911, April 12 and 13, 1915, and March 23, 1917. This tree has much larger leaves than those on your mounted specimen, slightly pubescent when they first appear especially on the midribs and veins, but soon become glabrous and are more lustrous on the lower surface than those of any species I know.

I think many of our No. 2's were collected down in that wood on the Lake Charles side of the river where we found so many big trees. If I am right in thinking your mounted specimen is a *nuda*, then we have no flowers whatever of No. 2 and no fruit of it at all. Evidently we have n't got to the bottom of this business by any means. Is best you take this up.

Since I wrote you about Oaks I have again reviewed the *Quercus texana* business and have reached the conclusion that it is perhaps best to separate *Shumardii* from *texana*. Geographically the species are different and there seems to be pretty constant characters in the winter-buds and color of the branchlets by which they can be separated. Under this new plan the Louisiana trees are *Q. Shumardii* with shallow cup and *Q. Shumardii* var. *Schneckii* for the tree with deeper cups.

What appears to be *Celtis georgiana*, which I think is nothing but *Celtis pumila*, has been discovered by Palmer in Texas, and as it is a common tree in the southeastern states I should expect it might turn up in Louisiana; at any rate it would be well to make a special attempt to collect *Celtis* in Louisiana. We have no *Celtis* material other than that collected by Palmer in the western part of the state. There is no *Celtis* here from eastern Louisiana collected by either you or by you and me together.

What are you doing about *Quercus myrtifolia*? I hope you are not going to have a spring frost to destroy the growth of the early spring.

March 18, 1918.

I can help you very little with your Louisiana *Crataegus*. The species from Holtonville, 2496, is *C. silvicola* Ashe. I do not know why I have never thought of this before. Perhaps the fact that this species has been found at Jackson, Mississippi, attracted my attention to it. As you know, the flowers of this have not been collected.

*Crataegus opaca* Hooker. I am not sure that I have told you that this is the name for the Louisiana tree which has been called *C. aestivalis*. We ought to have specimens from western Louisiana.



The Lake Charles *Crus-galli* species in yard on road to the river from the town is *C. Bushii* Sargent.

*C. edita* Sargent, Natchitoches, Bush #4, April 1, 1909, Cocks xvii. April 24, 1912.

*Crus-galli* species, stamens 20; anthers white; "high ground." Lake Charles, C. S. Sargent, April 10, 1915, is *C. unica* Sargent in Trees and Shrubs, ii. 237. This is a rare species originally from Marshall, Texas, and a good Louisiana find.

Palmer, Natchitoches No. 10 (7291 and 8721) is *C. fera* of Beadle.

I want to call your attention to the following:

Cocks, Pineville, *Crus-galli* species just out of flower April 5, 1912. Flowers, color of the anthers and fruit needed.

*Crus-galli* species, flowers April 24, no year, fruit not dated. Color of anthers needed. These two Pineville species look distinct.

Cocks, *Crus-galli* species, Natchitoches xii., xiii. and xvi., April 24 and 25, 1912, equals Palmer 7290, 8722, 9440. These all seem the same and a new species with twenty stamens and yellow anthers, a rare combination.

A *Crus-galli* species collected by us in low woods, West Lake Charles, March 23, year not on the label, 1917? This has ten to twelve stamens and pale rose anthers. I do not find any other Louisiana specimen like this. Do you remember the tree? Fruit is needed.

In August 1901 Bush collected at Minden a sterile branch of a distinct looking *Crus-galli* species "on right side of road to prairie west of town, in woods close to road, about three and a half miles from town and beyond spring." He collected another *Crus-galli* near Minden at the same time of which he says, — "Common in woods." I collected at Minden on April 15, 1901, a *Crus-galli* species in flower but made no notes on the color of the anthers. Is not Minden a place to explore?

Westfield *Crataegus*. #1, stamens twenty, anthers rose. This is the tree with very narrow leaves near the quarry and a new species. #2, stamens twenty, color of the anthers not noted. Is this the *Crus-galli* species we studied on the right-hand side of the road not very far from town on the way to the quarry? Have you the color of the anthers? My label "near quarry" on this number, but if it did grow by the quarry I do not seem to have a specimen of the roadside tree.

The *Flavae* species from roadside, West Feliciana. We have fruit collected by Mrs. Butler but no flowers and the color of the anthers should be known. It seems nearest to *C. abbita* Beadle but the pedicels and calyx-tube are more densely pubescent and the leaves of *C. abbita* do not have the very conspicuous clusters of white hairs in the axils of the leaves found in the Feliciana plant. I presume that all the plants of this group which we saw in West Feliciana are of the same species. This plant is especially interesting as the only *Flava[e]* species which we have found in Louisiana, and as the species of this group which grows further west. I hope you can get the flowers. Could n't Mrs. Butler collect and press them for you? This plant blooms very early.

*Viridis* species. You can add *C. velutina* Sargent (Trees and Shrubs,

ii. 238) to the Louisiana species as I find a specimen of it which I collected at Shreveport April 20, 1901. This is not surprising for it is common at Fulton, Arkansas.

*Viridis* species. A tree with dark rough bark in yard of house by road below Lake Charles. The stamens and anthers agree with those of *C. enucleata* Sargent, but the leaves have n't the very conspicuous axillary tufts of that species. The flowers are larger. This seems an undescribed species. Fruit is needed. You remember what a very handsome plant this was.

On October 8, 1913, we collected a *Viridis* species in low woods near Monroe. This was a large tree and had dark scaly bark, and was growing with *C. opaca*. Bush collected what I take to be the same thing August 10, 1900, near Minden "on right side of road to prairie west of town, just before getting to spring. Bark of trunk rough, dark, scaly and flaky, exactly as in *C. aestivalis* which is beside it." This seems to me an undescribed species and we ought to have flowers, color of the anthers, etc.

There are a number of interesting *Crus-galli* and *Viridis* species collected by Palmer in western Louisiana of which I have n't yet the color of the anthers. With that information I shall probably be able to refer some of these to described species.

I have a number of fragmentary *Viridis* specimens, including your # X. from Natchitoches April 5, 1912. The most interesting of these fragments are some sterile branches of a shrub two to three feet high with three-lobed leaves at the ends of the branches which I collected at Monroe April 13, 1901. Did you ever see such a thing?

I have discarded as hopeless the *Viridis* species on the roadside east of Opelousas as this tree has been cut down, and Richland specimens of *Viridis* species 16 and 23 of 1908 collected by you.

It is surprising that there are no *Mollis* species in western Louisiana for they are very common in Fulton, Arkansas, and eastern Texas; and I do not remember any species from eastern Louisiana but *silvicola* and *brachycantha*, and the *Flava* species. There must be others there.

Don't you think it would be a good idea to make a serious *Crataegus* drive this year and see if we cannot get this business closed up? So far as trees and shrubs are concerned there is n't anything else very important to do in Louisiana with the exception of a more thorough exploration of the eastern part of the state where I feel sure you will find species not now recognized as belonging to the state.

March 28, 1918.

I have yours of the 25th. When we collected the *Flavae* species in West Feliciana, the plants were out of bloom and we did not get the color of the anthers. It is possible but hardly probable that there are two *Flavae* in West Feliciana.

*Crataegus opaca* of Hooker is the only May Haw of Louisiana and

Texas and was first collected by Drummond. It is quite a different plant from the Carolina species of that name.

I hope you will be able to finish up *Crataegus* this year, and there is still that *Carya alba* with slender branches to dispose of.

You will, I am sure, be sorry to hear that my son who was so often my companion in Louisiana died in his sleep last week of what was probably some heart trouble. He was perfectly well and in the best of spirits when he went to bed in the evening. This occurred at French Lick, Indiana. We have been so often together in different and often remote parts of the world that the bond between us was a very close one.

## 170

April 5, 1918.

You collected an interesting *Crus-galli Crataegus* species at Sardis with villose corymbs, yellow anthers and ten stamens, your No. 1008. There is no fruiting specimen and only a couple of half-grown loose fruits. Perhaps you will be able to get fruiting specimens if you are in Alabama this summer. So far as I can see this is undescribed. Harbison does n't seem to have collected it, but he collected a *Crus-galli* species in your region with ten stamens and rose-colored anthers. Of this there is no fruit either.

There appear to be a lot of *Flavae* in that region, but, as I have already written to Harbison, there is n't a single fruiting specimen to go with either yours or his flowering specimens. I have asked him to look out for this and perhaps you will do the same.

## 171

April 9, 1918.

Thanks for your last letters. I am sorry to hear that *Crataegus* is beginning to misbehave itself this spring. The *Crus-galli* I should think would still be in flower for it is generally very late.

Is it not No. 1 with the broader leaves which is the tree by the roadside at Winnfield and No. 2 the tree of the quarry with a tall very slender stem and a small head of small branches? This is the way I have them numbered, but apparently you consider No. 2 the roadside tree.

## 172

May 10, 1918.

How are you getting on and have you found any new Louisiana trees? And are you doing anything about that wretched Ferry Linden at West Lake Charles?

I have a note that *Carya cordiformis* grows near the coast in western Louisiana. This I suppose would mean Lake Charles, but I can find no specimen here from western Louisiana except from Natchitoches and near Opelousas. Did you ever see it about Lake Charles or anywhere near the coast?

How about the specimen of *Carya pallida* from near Alexandria?

ARNOLD ARBORETUM, HARVARD UNIVERSITY,  
JAMAICA PLAIN,  
MASS.

May 10, 1918.

Dear Professor Cocks:

How are you getting on and have you found  
<sup>Miss</sup> any Louisiana trees? And are you doing anything about  
that wretched Ferry Linden at West Lake Charles?

I have a note that *Carya cordiformis* grows  
near the coast in western Louisiana. This I suppose  
would mean Lake Charles, but I can find no specimen here  
from western Louisiana except from Natchitoches and near  
Opelousas. Did you ever see it about Lake Charles or  
anywhere near the coast?

Faithfully yours,

L. S. Sargent

Professor R. S. Cocks,  
New Orleans, La.

Now about 2 specimens

of *Carya pallida*.

From New Orleans?

FIG. 1. Letter from SARGENT to COCKS (no. 172 of this series) with postscript in Sargent's difficult hand.

173

May 22, 1918.

I am finishing up my long delayed *Carya* paper and am going over the *leiodermis-callicoma* group.

No. 5 from east of Opelousas is the type of *C. leiodermis* and I don't know how to distinguish *C. callicoma* from it except by the smaller fruit and a thin husk and the bright red color of the young leaves, and I am not sure that the young leaves of *C. leiodermis* are not sometimes red. Do you know? Both forms seem to grow east of Opelousas and at Lake Charles where the red leaf is the most common. *C. leiodermis* was collected at Hammond, on the road from Springfield to Pontchatoula, May 29, 1917, and near Loranger March 30, 1917. This I think is the same. It is the tree I thought might be an *alba* with thin branchlets.

I think now our Winnfield tree near the quarry which has bothered us for so many years is also *C. leiodermis*. We got it west of Opelousas March 26, 1917, and it is I think your Natchitoches No. 2, October 1913, and No. 17, September 1914. It grows, too, at Natchez. If you know any character by which *callicoma* can be kept as a species please tell me, otherwise I shall call it *leiodermis* var. *callicoma*.

Your No. 5, Natchitoches October 1913, seems to be an *arkansana* which I shall call *C. Buckleyi* var. *arkansana*.

This seems to finish up all the unplaced *Carya* material from Louisiana. Now it is up to you to find something new.

174

May 25, 1918.

Palmer's Lake Charles No. 7682, Natchitoches 7411 and 7394, Grand Ecore 7524 and Chopin 7412 seem to be *Carya leiodermis*. They may belong to the variety but these specimens are without fruit and it is impossible to say whether they belong to the species or variety. It seems safer to put them under the species.

175

May 27, 1918.

Britton in his tree book says that the Nutmeg Hickory is called Bitter Walnut in Louisiana. This must be a fake story for in the first place the kernel is not bitter, and secondly is so rare in Louisiana that it cannot have secured a popular name. Moreover, it was not known to grow in Louisiana until after Britton's book was published, and he does not include that state in its range. I do not suppose that you have ever heard it called anything but Nutmeg Hickory.

176

May 29, 1918.

I am very glad to get the package of plants. The Ferry *Tilia* specimens are fine. I felt sure that if you stuck to the job long enough you would find

*Quercus laurifolia* in Louisiana and now you have done it. The little White Oak is a dwarf form of *Quercus stellata* Margaretta, and if it spreads by underground stems I do not see why it is not the variety *stolonifera* which grows at Selma.

We cannot see here anything in your *Leucothoë* but *axillaris* which varies greatly in the width of the leaves. I do not think there is anything in Small's species especially as broad and narrow leaves appear to occur and sometimes on the same plant. I hope you will find more things in eastern Louisiana.

177

June 4, 1918.

I send you a copy of my *Quercus* paper. Your Live Oak should be, of course, *Quercus eximia* and not *Q. eximea*.

178

June 11, 1918.

We have nuts but no leaf specimen of your *Carya laciniosa* from Berlin [Alabama]. Can't you dry one for us if the tree is still alive?

179

June 19, 1918.

Your *Carya* 4030 near Kentwood, Tangipahoa, is probably a *leiodermis*, but 4028 is *C. pallida* and the only intimation we have here that it is a Louisiana tree. I wish I could see your specimens from Alexandria.

I believe that you will find both *Carya Pecan* and *C. texana* in West Feliciana as these two trees occur at Natchez. They are certainly worth looking for.

We have no specimen of *C. ovata* from eastern Louisiana where no doubt it occurs. It is rather curious that we have no Alabama specimen of *C. ovata* except from the Selma region. I wonder if, like *C. laciniosa*, it only grows there in the state.

I have about finished up what I can do with *Carya*, not a very satisfactory piece of work.

180

July 12, 1918.

Your No. 1761, Richlands P[arish], May 1909, called *C[arya] ovata*, must be a *leiodermis*; certainly it is not *C. ovata*. The specimen consists only of a sterile branch. There is no other thin-branched Hickory in Louisiana but *leiodermis* to which it can be referred. I have finished my *Carya* paper and sent it to the printer, and now I must make my annual onslaught on *Tilia* which is by far the most difficult of all the groups.

I believe you haven't collected in Louisiana any *Azalea* but *A. nudiflora*. There is an *Azalea* in the swamps at Biloxi which seems to be a new

species, and *Azaleas* other than *nudiflora* are common in southern Arkansas and eastern Texas. Isn't this the genus that needs your attention?

I hope your crops are prospering.

181

July 16, 1918.

If everything, as you claim, grows in Selma and its neighborhood how does it happen that you have not found there a *Philadelphus*? Two species are credited to the state, although there is nothing in this herbarium to show that they really grow in Alabama. It might be worth while to look about for one of these plants in your region.

182

July 22, 1918.

The package of specimens has arrived. If you say that these *Tilia* specimens came from our tree by [the] ferry I suppose I shall have to believe you, but I have never seen *Tilia* behave in such a disgusting way before. I do not know what to think of it.

I am glad you sent the Hickory specimen for it is not *Carya laciniosa* at all but *C. tomentosa* variety *subcoriacea*. It is surprising that it should grow, however, in low ground. What sort of bark have these trees got? Please let me know about this as my paper on *Carya* is already in the hands of the printer. Your *laciniosa* from West Feliciana Parish seems to be all right.

183

July 29, 1918.

I have your note about *Philadelphus* and *Azalea*. I find your specimen of *Philadelphus* which has been placed under *P. inodorus*. This species and *grandiflorus* are very closely related.

The *Azalea* which you say you sent from Pearl River eight years ago we are unable to find. I should like another specimen sometime if you have one to spare. I suspect that it may be the new species from Biloxi. Is there no summer-flowering *Azalea* about Selma, or any *Azalea* except *nudiflora*? Harbison is finding several new species and I should not be surprised to find that some of them are in your neighborhood.

184

August 12, 1918.

I am much obliged for the Alabama specimen of *Carya laciniosa*. Judging by the color of the branchlets and the fruit there can be no doubt about the correctness of the determination, but the leaves are remarkably glabrous on the lower surface for this species.

I have at last finished my paper on *Tilia*, so please do not find any more new species about Selma. I think Louisiana, at least, is exhausted.

185

August 17, 1918.

Will not this autumn be a good time to collect *Crataegus* for the fruit in the hope of completing the specimens next spring with the flowers? Do not forget that *Quercus Cocksii* needs a good deal more investigation.

The *Azalea* in swamps at Biloxi is certainly a new species which grows also in the central peninsula of Florida and in southern Georgia where it is sometimes twenty feet high. It blooms apparently sometimes as late as August 1st. Why should not this be found in some of the swamps near Selma? I should guess that it was the *Azalea* you found once near Pearl River in Louisiana, although I do not think that *Azalea viscosa* gets into the south at all. It would be interesting to find this *Azalea* in both Alabama and Louisiana. I am sure, too, there are other undiscovered plants in eastern Louisiana.

I do not believe it has been as hot in Alabama as it has been here during the past week.

186

November 6, 1918.

I have yours of November 1st. I am very sorry to hear about your accident. That is a bad road between Opelousas and the western woods at the best and I fancy that mules are the safest method of transport over it. I am not surprised that you are knocked out.

I am glad to hear that *Carya cordiformis* grows near Selma but how was I expected to know if you did not send me a specimen? Isn't [what you have labeled] *C. megacarpa stelipila* [in reality *C.*] *leiodermis*? I hardly believe that *Gordonia* reaches Louisiana. Mohr found it at only one station in Alabama. Gray apparently guessed that it grew in Mississippi, at least there is no specimen in his herbarium to show that it grew there, and Robinson lays the blame to Gray. As for Small's statement that it grows in Louisiana, you know how much that is worth.

My *Tilia* paper is so long that it will be published in two parts in the November and December issues of *The Botanical Gazette*. Do not be discouraged about *Crataegus*. We shall certainly be able to get material we want next year.

187

November 27, 1918.

I am glad to get your letter of November 18th and the package of plants.

"*Azalea viscosa*" is certainly the same as the species at Biloxi, Mississippi, which is common in southern Georgia and in the central Florida peninsula. This is evidently a new species which seems to bloom at mid-summer in Georgia and Florida and sometimes gets to be twenty feet high. We are slowly getting together here material for a paper on American *Azaleas*.<sup>18</sup>

<sup>18</sup> WILSON, E. H. & A. REHDER, A monograph of azaleas. Publ. Arnold Arb. 9. 1921.



Your *Vaccinium* seems to be *tenellum*, but Palmer's *tenellum*, Morningport 9811 and Natchitoches 9429, called by him *tenellum*, are probably *V. Elliottii* which you seem to have collected at various places in Louisiana.

I hope you are getting ready for a successful *Crataegus* campaign in 1919.

188

December 6, 1918.

The tree which we used to think might be *Tilia glabra* in Louisiana and Alabama I have referred to *T. nuda* in spite of the tufts of hairs in the axils of the veins (see page 427 of my paper). This may not be a proper solution of the difficulty but I do not know how to make it otherwise.

I hope you may be able to distinguish the different species of *Tilia* when you see them in the woods. I certainly never expect to be able to do it. I am not very well satisfied with the outcome of this investigation, but the species show no really good botanical characters.

I have placed your *Quercus* 938 of Alabama with Trelease's *subintegra*. I said nothing about it in my paper for I made no mention of hybrids made by Trelease. His paper contains names only without descriptions or any references to his types.

I do not see much prospect of the appearance of the new edition of the Manual at present. It has taken the best part of the year to prepare the Oak, Hickory and Linden papers, and there are several other genera to work over. Now I am working on *Celtis* which is difficult, but fortunately there are not many species. It will take a year, I suppose, to print the book when it is ready.

Wodehouse it shall be. If a fellow insists on having such a lot of names I do not see how he could expect to get them all spelled correctly. I suspect the neighborhood of Opelousas is still the best part of the state for *Crataegus*. As you know, we never did anything in that region east of the railroad and south of the town that Harbison talks about. As far as I have seen there does not seem to be many species east of the river.

189

December 14, 1918.

In the Kew Herbarium there is a specimen collected by Drummond at New Orleans which proves to be *Salix longipes* variety *venulosa*. We can find no other indication, however, that this species grows in the state. Judging by Drummond's blue-fruited *Crataegus*, he labeled plants "New Orleans" which he collected across the lake. I enclose a few leaves and a flower-spike from a Texas specimen to show you what sort of a looking thing *Salix longipes* is. The species is common in Florida and in western Texas but we have no specimens from eastern Texas or Alabama. The Louisiana station for it seems worth looking up.

You will have to change the name of *Celtis mississippiensis* Bosc to *C. laevigata* Willdenow for it seems that Bosc never gave the *Celtis* which

he said came from the mouth of the Mississippi River a name and Willdenow's name is much earlier than the first published *C. mississippiensis*. It is astonishing how mistakes in botany are perpetuated from one generation to another.

190

December 16, 1918.

There is no *Celtis* in the herbarium from eastern Louisiana where I suppose it is common, and from western Louisiana only specimens collected by Palmer and one by Mohr near Alexandria. Apparently we have never paid any attention to *Celtis* and we ought to have more material here. *Celtis laevigata* must be common in Eastern Louisiana, and possibly *georgiana* which apparently grows in the Selma region.

191

December 18, 1918.

You appear to have got a new Alabama tree in *Celtis occidentalis* var. *crassifolia*, Sardis, 1913, no number. This is a tree with leaves very rough above and pilose below on the midribs and veins, and with pubescent petioles and peduncles. The leaves of your specimen are exceptionally entire for this variety but I do not think it can be anything else. Do you know anything about this tree and is it abundant?

192

December 30, 1918.

I found the other day in the Gray Herbarium a specimen of *Celtis laevigata* (*mississippiensis*) collected by Hale in Louisiana without date or locality, also a specimen of the same tree collected by Carleton R. Ball in the vicinity of Alexandria May 25, 1899 (No. 453).

Now it seems there are no Louisiana specimens of *Platanus* in the herbarium. Have you ever paid any attention to this tree? There is quite an interesting form which grows in Texas and also near Selma where it was collected by Harbison with leaves distinctly cuneate at the base. This form is without a name. I should think it must occur in Louisiana. I wish you would look at your specimens and see if the leaves of any of them are cuneate at the base. This is a genus of which I hope you will collect specimens for the Arboretum next year.

With all good wishes for the New Year, I am,

193

January 6, 1919.

A new tree for Louisiana is *Acer Negundo* var. *texanum* Pax. This is Palmer's No. 7546 from Chopin and No. 7597 from Alexandria. Your specimen collected in April 1901 in swamps at New Orleans, no number, is also var. *texanum*. This is the only specimen we have here from eastern Louisiana where I suppose it must be a common tree. It would be well

to collect it there. We have no specimen of *Negundo* of any sort from the Selma region, or indeed from any part of Alabama. If everything else grows at Selma I suppose the *Negundo* must be there.

194

January 14, 1919.

I am sorry to hear of your continuous hard luck as a planter and I shall be very sorry if you have to abandon your Berlin plantation for the neighborhood of Sardis is one of the best places in the United States for trees and I do not believe that field is exhausted yet.

We have here no specimen of typical *Celtis occidentalis* from Louisiana or Alabama, no *crassifolia* from Louisiana, and only the abnormal one with nearly entire leaves from Sardis about which I wrote you before. If *crassifolia* grows in Louisiana I should know about it at once. *Celtis georgiana*, which is common in the Selma region, I think will be found in eastern Louisiana.

Sugar Maple. The southern form of *Acer saccharum* differs from the common northern form in the glaucous (not green) lower surface of the leaves which are usually slightly pubescent along the under side of the midribs and veins. This is var. *glaucum* (Pax) Sargent. Your No. 2520 from Saint Francisville, May 15, 1915, I feel satisfied is this tree which we collected also with young leaves at Woodville, Mississippi. The Saint Francisville specimen is the only one I have seen in Louisiana. It seems more common in the Selma region where Harbison collected it several times. Your Sardis 825, July 2, 1915, is this tree. It is common in southern Arkansas but no one seems to have found it in western Louisiana where *A. floridanum* is common. The last can be distinguished by the pubescence which covers the whole lower surface of the leaves and by the much smaller fruit. I commend *Acer saccharum* to your prayerful consideration. If you can understand American Lindens I congratulate you for I certainly cannot.

195

January 16, 1919.

I have been studying the Red Maple and am not able to separate the variety *Drummondii* as a species for I find specimens with trilobed leaves rounded at the base which appear to connect it with *A. rubrum* var. *tridens*. For this form I am going to propose the name of *Acer rubrum* var. *Drummondii* f. *rotundata*, making the type Palmer's No. 7553 from Chopin. You got nearly the same form at Glen Gordon, Covington, May 28, 1911. It grows also at Poplar Bluff, Missouri. Unfortunately I have not seen the fruit of this form. Would it be possible to get it from the Covington tree this spring? This is the only *Drummondii* specimen we have from eastern Louisiana. We collected it on our trip to Natchez, near Woodville, Mississippi, so I suppose it grows in West Feliciana. Have you collected it there? This is a Louisiana tree which needs further study, especially in the autumn. Autumn specimens are needed to show the amount

and character of the tomentum on the leaves, petioles and branchlets at that season. Won't you look out for it then and try to establish its range in eastern Louisiana? How large does the Drummond Maple grow in Louisiana? The trees which grow in Alabama and Georgia and which have been sometimes referred to *Drummondii* I want to call var. *tomentosum* Pax. This variety differs from *Drummondii* in the much smaller fruit, glabrous branchlets, glabrous petioles and less tomentose leaves. Moore got this at Mt. Vernon but I do not find it among the Selma-Sardis specimens, or indeed a specimen of any sort of a Red Maple from there — why?

Of what may be considered the typical Red Maple from Louisiana we have Palmer's Natchitoches No. 7571 and perhaps No. 7041, with fruit only. Low woods, Winnfield, Cocks and Sargent, April 6, 1913, and nothing from East Louisiana where it should be looked for. Of the variety *tridens* one Louisiana specimen from West Lake Charles, Cocks and Sargent, April 13, 1915; Fairfax Road, Shreveport, Cocks, April 1, 1910; Butler Plantation, Cocks and Sargent, April 14, 1916; near Hammond, Cocks and Sargent, March 30, 1917; Lucknow, Richland Parish, Cocks and Sargent, March 1910; Winnfield, Cocks and Sargent, October 9, 1913.

The important trees to collect from are the common widely distributed species which show the greatest tendency to variation. These varieties are interesting and have been too much neglected. You are better placed for studying *Acer Drummondii* than any one and I venture to hope that you will pay attention to it and to other forms of the Red Maple.

196

January 20, 1919.

*Magnolia glauca* will have to be called *M. virginiana* I am sorry to say, and I am distinguishing the southern form with pedicels and branchlets thickly covered with silky white pubescence as variety *australis*. This is usually a large tree and is the only form in Alabama, Mississippi, Louisiana and Texas. I judge by the material here that this is a comparatively rare tree in Louisiana, for in this herbarium there are only the specimens we collected at Winnfield October 9, 1913, and Palmer's Natchitoches specimens numbered 7573 and 7931. These two specimens are remarkable in their broad oval leaves. Unfortunately there are no flowers. I should have supposed that Lake Charles would have been just the place for this tree.

Please notice that we have no specimens from eastern Louisiana and please tell what you know of the distribution of this *Magnolia* in Louisiana. More Louisiana material would be acceptable.

The flowers of our West Feliciana *Magnolia acuminata* are so large that I want to distinguish it as variety *ludoviciana*. I call the type the tree on the Dessert Plantation.<sup>19</sup> Is this name right and is this Plantation in Laurel Hill, and, if not, where is it? We got it also at the West Plantation.

<sup>19</sup> Near Bayou Sara, West Feliciana Parish.

Is this also in Laurel Hill? I suppose your Catalpa and St. Francisville specimens are the same but there are no flowers and the leaves are more typical of the species.

You ought if possible to make a thorough exploration of Louisiana and gather specimens of every tree, even the most common, for it is impossible to tell what may turn up. Can't you manage this?

## 197

January 27, 1919.

I have yours of January 19th. In regard to *Acer floridanum* we have your two Natchitoches specimens collected in 1902 and 1905, and Palmer's Natchitoches No. 7400; also *A. floridanum* collected by us at the Dessert Plantation April 12, 1916.

I am sure Elwes will enjoy the Louisiana trees. I think, however, that he will fully occupy your time while he is there and that you will have all you can do and listen to without being bothered with me at the same time. If I ever get to Louisiana again I shall hardly select Elwes for a companion. I hope you are going to be able to get all over the state this year and finish up the trees and shrubs.

## 198

January 28, 1919.

I am glad to hear from yours of the 24th that *Magnolia glauca* is so common in Louisiana. The fact that we did not know this here only shows how poor this herbarium still is in Louisiana specimens. Does it ever grow in Louisiana as a shrub? Please notice if the petiole of the flower is ever glabrous as in the northern form of this tree. On specimens from west of Florida which I have seen all the pedicels are covered with white silky hairs.

## 199

January 31, 1919.

I am much obliged for the package of specimens which arrived this morning. The two *Magnolia glauca* specimens have the silky pubescent pedicels and are my *M. virginiana* var. *australis*. I fancy that every Louisiana specimen will be of this variety.

No. 658, *Celtis occidentalis* from Sardis is *C. laevigata* (*mississippiensis*).

No. 748, *Acer Drummondii* = *Acer rubrum* var. *Drummondii* forma *rotundata* Sarg., showing a connection of *Acer Drummondii* with *Acer tridens*.

No. 2818, *Acer Drummondii*, is intermediate between *A. rubrum* var. *Drummondii* and the forma *rotundata*.

I am getting a good deal interested in *Acer Drummondii* and wish I knew more of its distribution. I now believe that it does not get east of Mississippi and that all the forms from Alabama, Florida, Georgia, etc.,

which have been referred to it are *Acer rubrum tomentosum*. There is a lot of talk about this in my next Botanical Gazette paper which is booked for the March number.

200

February 4, 1919.

Palmer's *Celtis* from Cameron Parish is No. 3533, not No. 8534 as you say. I do not think it can be anything but a rather small-leaved form of *Celtis mississippiensis* which varies greatly in the size of the leaves and in their broader but narrower bases. We have n't in this herbarium a single *Celtis* specimen collected by you or by you and I. Louisiana certainly ought to be better represented here.

Elwes is all right. He is a gentleman and has already been pretty much all over the world. The only trouble is that he talks too much and too loudly and positively, and so much that he has gone around the world without really seeing anything. It is perfectly all right to take him to Butler's or anywhere else. My only idea was that if I wanted to have a quiet and restful time in Louisiana I should not select him for a member of the party.

201

February 6, 1919.

Your *Acer rubrum* No. 869, New Orleans, is a puzzle. It is not *rubrum* and looks more like *nigrum* than anything else. If it is *nigrum* and not a cultivated tree it is a very long way from where it belongs. Do you remember this tree and is it still in existence? This seems to me a matter worth investigating. As the label says New Orleans I think it may have been planted there.

202

March 1, 1919.

It is some time since I heard from you. Was that *Acer nigrum* from Louisiana too much for you? Small, I see, credits *Castanea nana* to Louisiana. We certainly have no evidence that it grows in the state and there are no specimens here from Mississippi or Alabama. I am getting interested in this plant for Harbison has found a Chinquapin on St. Andrew's Bay in western Florida forty feet high which, although I have not seen the fruit, I take to be a glabrous form of *C. nana* for which, by the way, *C. alnifolia* Nuttall is the correct name. It would be well therefore, if you see any strange looking Chinquapins in your travels, to make specimens. All the forms of *alnifolia* are easily distinguished by the glabrous or nearly glabrous branchlets and much narrower leaves; and by the prickles on the fruit being in distinctly separated clusters.

Elwes seems to be weakening on his trip to America this spring as he has difficulty in getting transportation. He was not, however, quite decided when he wrote last.

What is the *Crataegus* situation?

## 203

March 10, 1919.

I have this morning your letter of March 6th. I had no idea Ames was in New Orleans. A letter addressed to him at the Ames Building, Boston, will reach him.

I am glad to hear it is a late season with you for this means that there will be a better chance for *Crataegus*.

As I wrote you, the last time I heard from Elwes he was thinking of giving up his trip.

I am planning to impose on your good nature by giving a letter of introduction to you to Professor Blareningham of the Pasteur Institute and the University of Paris. He is here this winter as an exchange Professor at Harvard and is planning a journey south and west which will take him to New Orleans for a day or two sometime before the end of this month. If you could arrange for him to make a trip across Lake Pontchartrain, perhaps that would be the best thing he could do in the short time he will have in New Orleans. He is particularly interested in trees for he has been put in charge of the Arboretum at Angiers which has lately come into the control of the Pasteur Institute. His wife speaks English quite well.

## 204

March 18, 1919.

Have you ever looked for *Myrica inodora* on the Louisiana side of Pearl River? It grows at Poplarville, Mississippi, and might get further west. Pearl River swamps in Washington Parish would be the place to look for it.

How does it happen that there is no *Myrica* about Selma as we have no specimen from there?

I had another letter from Elwes telling me that with his nephew, a naval officer, he is sailing on the 25th of March for New York. He proposes to go south before coming here. Whatever equipment you may need for your journey with him you certainly will not require an ear trumpet.

## 205

March 20, 1919.

When you go to West Feliciana with Elwes please pay attention to that species of the *Flavae* Group of *Crataegus* about which we do not yet know enough. You remember, of course, that station of Harbison's just off the railroad below Opelousas which we have never visited.

## 206

March 22, 1919.

I have yours of March 20th about a Garden Society and I will see if

I cannot find some material in our nursery to send you the first of the week.

They call *Crataegus* beastly, but there is really a lot of fun in them?

207

March 26, 1919.

All the plants which I can find in our nursery at all suitable for Louisiana are mentioned on the enclosed, and go by parcel post. It is a very poor and unsatisfactory list but by another year or two the seedlings of the Formosa trees, all of which I hope will do well in Louisiana, ought to be big enough to send you.

208

April 5, 1919.

We have no specimen of *Chrysobalanus oblongifolius* from Louisiana and I shall be very glad of your specimen from Bogalusa.

I had a letter from Blareningham written in New Orleans. Instead of staying one day in Miami, Florida, as he intended, he staid three. This cut down his Louisiana visit and apparently he only staid a few hours in New Orleans. He said he did not have time to look you up but would write to you explaining why he had not called. This I suppose he will do in time.

I have n't heard yet that Elwes has arrived but I suppose he may get in now any day. I have advised him to go to New Orleans via Jacksonville, Florida, and to stop off at River Junction, Florida. If he does this it may take him some days to recuperate.

I hope you have had a successful time with *Crataegus*, and I regret extremely that I was not with you. I am really pining for another visit to that hotel in Opelousas.

209

May 29, 1919.

Many thanks for the package of *Crataegus* which I have looked over. No. 3133, *C. viridis* or very near it.

No. 3135, 3136, *C. viridis* or close to it.

Nos. 3137, 3138, 3140, 3146, *C. viridis*.

No. 3144, one of the *Viridis* Group but it looks distinct. Fruit should be collected.

Nos. 3144 [sic], 3148, *Acer rubrum tomentosum*.

No. 3147, *Crataegus* of the *Viridis* Group but it looks distinct. Fruit should be collected.

No. 3149, another distinct looking species of the *Viridis* Group. Fruit should be collected.

No. 3151, a distinct looking *Viridis* species of which fruit should be collected.

Nos. 3153, 3154, *C. viridis*.

Nos. 3158, 3167, 3169, *Ilex longipes*.



No. 3175, *Ilex lucida*.

Nos. 3168, 3145, *Ilex*. These I should think represented the same species; unless this is *Ilex monticola* I don't know it. It is desirable to get mature leaves and fruit. The shape of the leaves agrees pretty well with specimens here of *Ilex monticola* from North Carolina but their serration is rather different. I hope you have not found a new arborescent *Ilex*.

No. 3155, *C. viridis*. No. 3156, something near *C. viridis*.

No. 3172, *Leucothoë racemosa*. You have also collected this at Covington.

No. 3131, *Gaylussacia hirtella*. We have this from Ocean Springs, Mississippi.

No. 3163, *Pieris nitida*. We collected this at Hammond.

Your shrubby *Myrica* from Bogalusa is not like anything I have seen. This needs further investigation. Judging from the material in this herbarium, I should think it was an undescribed species. I am glad that it is only a shrub as *Myrica* for the new Manual will be in type in a few days.

Judging by the *Crataegus* specimens, I should not think you had been in that particular field along the railroad south of Opelousas that Harbison has always been talking about.

I hope to hear that you are coming north this summer. Won't it be necessary pretty soon to come here to elaborate your Catalogue of Louisiana plants?

210

June 27, 1919.

In this herbarium there is one specimen only of *Castanea*. This was collected by you at Covington March 28th, 1911, leaves only. It appears to be my *C. alnifolia* var. *floridana*.

*Castanea pumila* must be common in Louisiana as it grows at Natchez, Biloxi, Fulton on the Red River, and at many places in eastern Texas. How have we and Palmer missed it? Please tell me what you know about this tree in Louisiana.

Elwes was here four very hot days and then went to Rochester, New York, and to New York City. He sailed for home ten days ago and I suppose is now safely there. He appears to have had a very good time and to have seen much to interest him. He did not, however, seem to be much impressed with the Live Oaks, and said the largest he saw were on Avery Island where I did not see anything very large in the way of trees.

Any chance of your coming north this summer?

211

July 14, 1919.

I take much pleasure in having your name placed on the mailing list of the Journal of the Arnold Arboretum for a complimentary copy.

You will, I hope, receive the first number in the course of a few days.

212

July 17, 1919.

I have your last package of plants.

1915 may be a new variety of *Celtis pumila*, or perhaps a new species. The shape and serration of the leaves are like those of *C. occidentalis* but the pedicels are much too short.

1916, *Celtis occidentalis* [var.] *crassifolia*.

1917, *Celtis pumila*.

1918, *Vaccinium atrococcus*.

1919, *Fraxinus americana*? It is too pubescent and the leaves are not of the normal shape. Fruit of this should be collected.

1920, *Fraxinus pennsylvanica* var. *lanceolata*.

1921, *Fraxinus americana*.

1922, *Carya cordiformis*.

1923, *Vaccinium tenellum*.

The Selma region seems to be maintaining its reputation for strange trees. I am sorry to hear that you won't be here this summer.

213

August 27, 1919.

We have *Ulmus fulva* only from western Louisiana. Does it not occur east of the river?

An early answer will oblige.

214

August 29? [1919]

I thank you for your note. The right sort of things certainly have not been coming my way of late for in the last eighteen months five members of my immediate family have gone!

Fortunately I have three devoted daughters & a great deal of work to do.

215

September 2, 1919.

I have to take up *Prunus* for my new Manual now almost at once and have only unsatisfactory material and imperfect knowledge to work with.

You collected March 22d, 1911, at Natchitoches *Prunus* 6 and 7. Have you followed these up? I suspect they may be the so-called Big Tree Plum, *P. arkansana* or *P. mexicana* S. Watson. Palmer also collected a number of specimens at Natchitoches but no mature leaves or fruit. These are needed from western Louisiana. We have from you also sterile branches of the *Prunus* collected at Ruston, Louisiana, Nos. 4 and 9, August 4 and September 22, 1914, but these are only sterile branches.

You have seen, I believe, about Sardis *Prunus umbellata* with yellow fruit. I cannot make up my mind whether the red-fruited tree in Alabama and Florida which looks like *umbellata* should be considered a variety of that species or something distinct. Have you any opinion on this?

There is still for you to look up this autumn *Castanea alnifolia*, *C. floridana* from across the lake, *Quercus Cocksii*, your new *Myrica* from eastern Louisiana, and many *Crataegus* numbers.

Is n't it about time for you to begin to think about getting your catalogue ready for publication? I want to live long enough to see it.<sup>20</sup>

## 216

September 4, 1919.

I am sending you under another cover a few seeds of a Mulberry and an Elm from the Himalayas. These trees ought to succeed in New Orleans if any one can be found to plant the seeds and look after the young plants.

## 217

October 31, 1919.

We are sending you by parcel post two plants of *Pinus luchuensis*, eight of *Paulownia Mikado* and six of *Quercus pachyloma*. They were raised from seed collected by Wilson in Formosa and these trees ought to flourish in New Orleans. Will you find some one who will take good care of them? The *Paulownia* is described by Wilson as a magnificent flowering tree.

It is some time since I have heard from you, so I suppose you have been in the field. I hope that you raised a good crop of cotton in Alabama this year for the present price seems most encouraging.

With kind regards, I am

## 218

November 5, 1919.

We suspect here now that *Hamamelis virginiana* does not grow in Louisiana and that all the specimens which we have from the state should be referred to *Hamamelis vernalis* which is a winter and early spring bloomer, and differs from the northern plant which flowers in October or early November by the abundance of the stellate pubescence on the lower surface of the leaves. *Hamamelis vernalis* as I have seen it in Missouri suckers freely, spreading into large clumps, while *H. virginiana* does not sucker. The Louisiana specimens which seem to belong to *H. vernalis* are, —

Richland Parish, Cocks, April 18, 1910, "reported to bloom February and March"; Ruston, Cocks, July 1909, with a flowering branch collected February 4, 1911; Lake Charles, Cocks, March 27, 1911, Sargent, March 20, 1911; low woods, Winnfield, Sargent, April 6, 1913, October 9, 1913; low woods west of Opelousas, Sargent, April 4, 1913, "Tree 18 feet"; Butler Plantation, Sargent, April 12, 1916; Covington, Sargent, April 1, 1900, Cocks, April 14, 1914, with flowers collected December 28th, April 10, 1910, "reported flowering in January." Also the following numbers of Palmer collected in western Louisiana: 7065, 7246, 7596, 9432, 9559.

<sup>20</sup> Catalogue never published. A holograph ms. card file of plant names and localities dating from this period is in the Department of Botany at Tulane.

Texas and southern Mississippi specimens seem to belong to *Hamamelis vernalis*. The specimens from Louisiana in flower are very fragmentary and unsatisfactory, and I am writing you this now in the hope that you will follow up the *Hamamelis* business this autumn and winter and find out just when the Louisiana plants flower. I remember the large treelike plant west of Opelousas and if it is *H. vernalis* I am afraid this species will have to find a place in the Manual. Am I right in thinking there are large treelike specimens in eastern Louisiana?

I wish you would look out for large treelike specimens and give me their dimensions, also please notice if the suckering habit is common in Louisiana.

I suppose some sort of a *Hamamelis* grows at Sardis but there is no specimen here, and only one Alabama specimen collected by Harbison on Sand Mountain. I am afraid there is still much to learn about trees north and south.

219

November 15, 1919.

Glad to get your letter about *Hamamelis*. I am surprised that the Alabama and Louisiana trees are so large. Can't you spare me a specimen from Alabama: It is certainly curious that this winter-blooming species has been so long mistaken for *Hamamelis virginica* [sic]. I hope you can send us more and better Louisiana flowering material than we have now.

I will see what can be done about *Rosa Hugonis*. I think we can get them for you.

220

November 21, 1919.

The package of plants has arrived safely — many thanks. I am very glad to get the *Castanea* from Sardis. It is what I have called *Castanea alnifolia* var. *floridana*.

Your *Myrica* I do not know at all. As far as I can see now it looks like a new species. The black-fruited *Vaccinium* is, as you suggest, *melanocarpum*.

I am sorry you did not include a specimen of *Hamamelis* from Sardis. I am anxious to see this. Can't you help me?

221

November 25, 1919.

I hope you are going to be able to send me a specimen of *Hamamelis* from the Selma region. Possibly *Hamamelis virginiana* gets into northern Alabama but I do not feel at all sure of it, and I doubt if it is anywhere else in the Gulf States.

Mohr talks about *Hamamelis* being common all over the state of Alabama but we have only one specimen without flowers or fruit from the

state. *Hamamelis* has to go to the printer now almost at once, so I shall be glad of any help you can give me.

222

December 3, 1919.

The Alabama *Hamamelis* has arrived this morning and is the same as the Louisiana plant. I am taking up for it Pursh's name of *Hamamelis macrophylla* for it seems sufficiently distinct in its short stellate pubescence and the roughness of the leaves caused by the persistence of the bases of this pubescence. It is the only species in the Gulf States where it is apparently common and generally distributed, although it does not get far south apparently in Florida. I understand that the inner surface of the calyx is yellow in this species, like that of *H. virginiana*, and not red as in *H. vernalis*. Can you confirm this idea?

223

December 13, 1919.

By all means send me a few of your specimens of the Alabama Witch Hazel for we have very poor flowering material. I am glad to have the information about the color of the inner surface of the calyx-lobes.

224

December 18, 1919.

Here are a few *Crataegus* names for you:

*Crataegus viridis* Palmer, Nos. 8720, 7283, 7284, 8835, 8897, 8931, 9406, 9409, 9454.

Low woods west of Opelousas, April 4, 1913, No. 5, C. S. Sargent; near Bogalusa, Cocks, No. 3151, April 15, 1919.

East Opelousas, Cocks, April 4 and 5, 1919, Nos. 3140, 3141, 3146, 3147, 3153, 3154, 3155, 3156, 3137, 3134, 3133, 3138.

*Crataegus edita*, Cocks, Natchitoches, April 24, 1912, No. xvii.; Palmer Natchitoches, Nos. 7288, 8898, 9422.

*Crataegus Bushii* Sarg., our *Crus-galli* tree in the yard on road to English Bayou from Lake Charles; Palmer, Chopin, No. 7234 and No. 8843, Lake Charles No. 7696.

You remember the large tree of the *Viridis* Group in yard down the road from Lake Charles with twenty rose-colored anthers and dark bark. You have n't got the fruit of this and there is no other Louisiana specimen here like it. Except in some minor characters it is a good deal like *C. penita* Beadle from Chattanooga. It is also a good deal like *C.* [blank] Sarg. from Fulton, Arkansas, but it does n't have the very conspicuous tufts of hairs in the axils of the leaves of that species. On a single individual and without fruit I don't know if it is wise to say much about the Lake Charles tree which as we saw it is certainly handsome and interesting.

With the compliments of the season and all good wishes for the New Year, I am

## 225

December 26, 1919.

Thanks for your package of specimens. The *Castanea* from Baton Rouge is *pumila*. The Selma *Hamamelis* is interesting and I suppose is *macrophylla*, but the pubescence is different and pubescent through the season on the old leaves, so that the tubercles which are usually so prominent on the Louisiana specimens do not appear. I should be very glad to see spring or summer leaves of the Selma plant. Can you manage these?

I am particularly glad to get your Opelousas specimen of *Amelanchier canadensis* which apparently is a rare plant in western Louisiana, although common enough east of the river. Palmer never seems to have collected it, and you and I never collected it together. I have only one other western Louisiana specimen which was also collected by you. I should have supposed that Lake Charles would have been just the place for *Amelanchier*. We have no evidence that it gets to any part of southern Arkansas or that it reaches Texas. Have you ever found it further west than Opelousas? I hope you will let me know about it.

With all good wishes for the New Year, I am,

## 226

December 27, 1919.

I have this morning yours of the 22d. I have heard the name of Leavitt, a supposed landscape gardener, but I know nothing of his ability. Judging by others in his class, you may be expected to hear from him how to make in New Orleans a Long Island Italian garden.

As soon as I got your letter I wrote to some people in Pennsylvania who propagate *Rosa Hugonis* and asked them to send half a dozen plants to you, and I have written again today to find out why they have n't done it. When I hear from them on the subject I will communicate with you again.

I have got to *Crataegus* in the Manual!

## 227

January 2, 1920.

Conrad [i.e. Conard] & Jones, nurserymen in West Grove, Pennsylvania, tell me that some time ago they sent you two plants of *Rosa Hugonis* and later four others. Please let me know if these arrived and if they were in good condition.

The best I can do with that *Crataegus* of the *Flava* Group from West Feliciana Parish is to call it *Crataegus constans* Beadle. I should not like to swear that the determination was correct for we have no type of *C. constans* and Beadle's descriptions are rather vague but the specimens agree fairly well with his description and I don't believe you can do better than to adopt this name.

The *Crus-galli* species with yellow anthers, your No. 1008 which you say is common near Sardis, seems to be *Crataegus algens* Beadle. No one has

collected fruit from the Sardis region. Harbison's 1471 is apparently the same. The Sardis *Crus-galli* species with purple anthers from the Sardis region is evidently *C. torva*. It is Harbison's No. 1470. No fruit of this has been collected and there is no evidence here that you have collected it. The narrow-leaved *Crus-galli* species from near the quarry at Winnfield I am calling *C. Cocksii*, I hope you can bear it.

## 228

January 5, 1920.

Professor Wiegand, who is an authority on eastern *Amelanchiers*, saw yours from Sardis the other day and thought it was an undescribed species which he has found growing from central New York southward to Alabama. He is working on a revision of his paper on *Amelanchiers* and no doubt will have something to say about these plants in the course of time.

*Crataegus* is easy in comparison with *Prunus* which I am afraid is a pretty hopeless proposition. We received from you on August 20, 1918, some small light yellow plums. Is this your No. 36, a leaf specimen with one fruit on it which, however, looks much larger than that received on August 20. No. 36 looks like Hederick's [= Hedrick's] *angustifolia* var. *varians*. If this is a good guess, then I suppose No. 36 is an introduced or escaped plant. Indeed all the *angustifolias* must be that as apparently it does not grow wild anywhere east of the Mississippi River.

Let me hear anything you have to say about plums at your early convenience.

## 229

January 11, 1920.

We have no specimen of *Crataegus opaca* (*aestivalis*) from eastern Louisiana. Have you ever found it there and where? It grows near Mobile and at Meridian and at Hattiesburg, Mississippi, and, as you know, it is very common all over western Louisiana.

## 230

February 16, 1920.

Hooker mentions without description a *Pyrus arbutifolia macrophylla* as collected by Drummond at New Orleans and Covington. Do you know any large-leaved *Aronia* in Louisiana? In this herbarium there is no specimen at all of *Aronia* from eastern Louisiana. I do not know how we could have missed it at Covington. If you have Covington specimens with large leaves I wish you would let us see one of these at once. Palmer collected in St. Augustine County, Texas, a large-leaved, red-fruited *Aronia* which he describes as a tree twenty feet high. The size of the leaves would agree with Hooker's name. The question is, is there a large-leaved variety treelike in habit in Covington or in the neighborhood of New Orleans.

Your specimen of *Aronia arbutifolia* collected at Deridder April 5, 1912,

is typical. We collected the same thing at Winnfield and I collected it at Biloxi when I was last there.

We are having a terrible winter and are so buried in snow that it is almost impossible to get about. I hope you are well.

231

February 23, 1920.

I don't make anything out of *Fraxinus Darlingtonii* which I fancy is nothing but *Fraxinus pennsylvanica*. Britton described a large number of Ash trees, but according to our ideas here none of them have any standing. *Fraxinus pauciflora* Nuttall is the correct name of *Fraxinus floridana* of my Manual. We have here a specimen collected by Fendler at New Orleans April 1848 consisting of a single leaf and a cluster of fruit about two-thirds grown. The specimen is not satisfactory but I think it is *F. pauciflora* which I hope you will rediscover. Except for this specimen I have no indication that this Ash grows anywhere west of the Appalachicola River in Florida.

I hope you will look further for *Aronia* in the Covington region and make us some specimens. I will try and get from Kew photographs of the specimens collected by Drummond in Louisiana.

232

March 1, 1920.

We have here no specimen of *Crataegus spathulata* from eastern Louisiana. Have you ever found it there? As it grows near Natchez it might be expected in West Feliciana Parish. It does not appear to be in southern Mississippi, and it is, as you know, fairly common in the Red River Valley in Louisiana.

An early answer will oblige.

233

March 2, 1920.

We have placed your Alabama *Fraxinus* No. 946 with *pennsylvanica* var. *lanceolata*. The distinctly acuminate fruit is unusual, although we have the specimens from Mississippi with similar fruit. I do not believe there is any doubt, however, about the species. I should think that *Fraxinus caroliniana* might grow in the Selma region but apparently you have n't collected it there. I am glad to hear you are starting out again for *Crataegus*.

It does n't look very much like spring in these parts for there are still about three feet of snow on the ground and the thermometer on the 1st of March was several degrees below zero. We do not remember to have had a winter like this before.

234

March 6, 1920.

We have no specimen of *Crataegus apiifolia* from eastern Louisiana. It



must grow there I should think, certainly in West Feliciana as it seems to be common about Natchez. Can't you send us a specimen?

We seem much less well provided with eastern Louisiana plants than with those from west of the river.

The worst snow-storm of the year is going on today.

235

March 9, 1920.

I am glad to hear that *Crataegus spathulata* is common in eastern Louisiana, but how did you expect me to know it if you never sent me a specimen from that part of the state? I certainly do not remember to have seen it there myself. We are very short here of eastern Louisiana material and I wish we had more of it.

236

March 10, 1920.

From eastern Louisiana our only specimen of *Acer floridanum* was collected by us April 12, 1916, at the Dessert Plantation near Bayou Sara and called *Acer saccharum*. Our only other Louisiana specimens are from Natchitoches. I hope you will be able this spring to more fully locate this tree in Louisiana. It is probably common in some parts of the state.

*Acer saccharum* var. *glaucum* as a Louisiana tree does not seem to be very well known. The only Louisiana specimen we have here is your No. 2520, St. Francisville, May 15, 1915, and doubtfully referred by you to *A. floridanum*. This is another tree which I hope you will follow up this spring as there is no reason why it should not be common in Louisiana.

237

March 15, 1920.

The books talk about *Halesia tetraptera* in Louisiana and Texas. This certainly must be a mistake. The only indication we have that this tree grows west of the Mississippi River is one specimen collected in Arkansas by Palmer. We have no specimen from Florida or Mississippi and only one from Alabama and that of course is from Selma, a region in which for some unknown reason so many northern plants find conditions suitable for them. The common east Gulf States species with four-winged fruit is *Halesia parviflora* which is evidently much more abundant than I had supposed and grows into a small tree. This form is also at Selma; it grows at Laurel, Mississippi, and it would not therefore be very surprising if it got into Louisiana.

Britton claims that his *Fraxinus Smallii* and *F. Darlingtoniana* [*darlingtonii*] grow in Louisiana. These we take it are only forms of the Red Ash, *Fraxinus pennsylvanica*, and there is no indication here that this tree gets into Louisiana at all. Have you ever found it there? It is a tree certainly to be looked for, and if you can find it this spring it will be quite an assistance to me as I must now take up *Fraxinus* and *Halesia* for my Manual very soon.

Rehder has gone to New York today to look up some things in the herbarium of the New York Botanic Garden and I have asked him to see if he can find evidence there of Britton's species of *Fraxinus* growing in Louisiana.

238

March 18, 1920.

Rehder is back from his trip to New York and reports the only Louisiana specimen of any of Britton's new Ashes is one called there *Fraxinus Darlingtonii*, a single specimen collected by C. R. Ball at Gretna across the River from New Orleans. This is perfectly glabrous and the ordinary form of the Green Ash, so I do not think that *Fraxinus Darlingtonii* need bother you except as a synonym.

*Bumelia cassinifolia* is based on a single fragmentary specimen collected by Bush near Opelousas. This is all the material that there is in New York. We have a photograph of the type specimen with a single leaf which we should be glad to lend you if you care to see it. I do not believe there is anything in it however. They certainly have a talent in New York for making trouble.

[*To be concluded*]

## NOMENCLATURAL NOTES ON *DIPSACUS FULLONUM* AND *DIPSACUS SATIVUS*<sup>1</sup>

I. K. FERGUSON AND GEORGE K. BRIZICKY

WHILE ONE OF US was preparing an account of the Dipsacaceae for a generic flora of the southeastern United States (Ferguson, Jour. Arnold Arb. 46: 226–231. 1965), it was found that the name *Dipsacus fullonum* had been and is still being used by a number of authors in different ways and that the combination *D. sativus* has been attributed to several different authors. It seems desirable to review these problems, in the hope of resolving the confusion surrounding the usage and typification of *D. fullonum* and the authority for the combination *D. sativus*.

### DIPSACUS FULLONUM

The name *Dipsacus fullonum* has been used in at least two ways. Some authors have applied the name to the wild teasel, which has erect receptacular bracts; the cultivated teasel, which has recurved receptacular bracts, is then referred to as *D. sativus*. Among the workers who have adopted this treatment are F. A. Scholler (Fl. Barbiensis 47. 1775), C. Schkuhr (Bot. Handb. 1: 67. 1791), N. E. Brown (English Botany, ed. 3. Supplement. 197, 198. 1892), E. de Halácsy (Consp. Fl. Graec. 1: 757. 1901), F. N. Williams (Prodr. Fl. Brit. 1: 201. 1903), E. G. Bobrov (Fl. URSS 24: 21–23. 1957), and, most recently, A. R. Clapham (in Clapham, Tutin, & Warburg, Fl. Brit. Isles, ed. 2. 797. 1962). Numerous other authors, including, it appears, all American workers, have applied the epithet "*fullonum*" to the cultivated teasel and the name *D. sylvestris* Hudson to the wild plant.

A number of authors have commented on the different usages of the name *Dipsacus fullonum*. Brown, Williams, and Bobrov (see references cited above) have each pointed out that the name has been misapplied, maintaining that Linnaeus intended the epithet "*fullonum*" to refer to the wild plant. Arthur Cronquist (in Hitchcock, Cronquist, Ownbey, & Thompson, Vasc. Pl. Pacif. NW. 4: 480, 481. 1959), although referring to the wild teasel as *D. fullonum* subsp. *sylvestris*, has observed that *D. fullonum* could be typified by the wild plant. He says, "The weight of historical practice, however, has been to accept the more logical, if perhaps less legally proper typification of Hudson, who in 1762 considered the two

<sup>1</sup> Continuing a series of miscellaneous notes and papers on the flora of the southeastern United States made possible through the support of George R. Cooley and a grant from the National Science Foundation. The authors are indebted to Carroll E. Wood, Jr., for his valuable advice and suggestions.

phases to represent different species and restricted the name *D. fullonum* L. to the cultivated plant with recurved receptacular bracts."

Pursuing still another course, H. Schinz & A. Thellung (Bull. Herb. Boiss. II. 7: 503. 1907) and R. Mansfeld (Repert. Sp. Nov. 47: 155. 1939) have rejected *Dipsacus fullonum* L. as a nomen ambiguum.

In *Species Plantarum* (1: 97. 1753), Linnaeus described *Dipsacus fullonum* as a wild plant with erect receptacular bracts and indicated a variety  $\beta$ , which appears to be the cultivated plant with hooked receptacular bracts:

1. DIPSACUS foliis sessilibus serratis. *fullonum.*  
*Dipsacus foliis connato-perfoliatis, Hort. ups. 25. aristis fructus rectis. Sauv. monsp. 156.*  
*Dipsacus capitulis florum conicis. Hort. cliff. 29. Gron. virg. 15. Roy. lugdb. 188. Dalib. paris. 44.*  
*Dipsacus sylvestris aut Virga Pastoris major. Bauh. pin. 385.*  
*Dipsacus sylvestris. Dod. pempt. 735.*
- $\beta$ . *Dipsacus sativus. Bauh. pin. 385. aristis fructus hamatis. Sauv. monsp. 156.*  
*Habitat in Gallia, Anglia, Italia. ♂*

All references under the first element clearly show that Linnaeus understood them to refer to the wild teasel with erect receptacular bracts, while those under the variety  $\beta$  indicate that he was referring to the cultivated plant with recurved receptacular bracts. The text of the second edition of *Species Plantarum* (1762) is unchanged, but in the appendix to that work (1763) Linnaeus formally named the variety *D. fullonum*  $\beta$  *sativus*.

The year before this, Hudson, in his *Flora Anglica* (49. 1762), segregated the wild plant, giving it a new name, *Dipsacus sylvestris*, applying *D. fullonum* to the cultivated teasel and citing *Species Plantarum* in the references under the latter species.

Most subsequent authors have recognized the wild teasel, with erect receptacular bracts, and the cultivated teasel, with recurved bracts, as distinct species or subspecies and have interpreted *D. fullonum* in either of two ways: (1) as represented by the specimen in the Linnaean Herbarium, which is the wild plant with erect receptacular bracts and which is labeled "*fullonum*" in Linnaeus' handwriting, or (2) by following Hudson's treatment and adopting the epithet "*fullonum*" for the cultivated plant with recurved receptacular bracts.

It may be contended that the epithet "*fullonum*" circumscribed the two entities that Linnaeus recognized in *Species Plantarum* and that Hudson's treatment effectively typified *Dipsacus fullonum*. In support of this view it may be argued, as Sprague has suggested, that Linnaeus intended the epithet "*fullonum*" to apply to the cultivated teasel because of the origin of the name. However, this argument does not seem to be of great importance, for many Linnaean names are inappropriate. On the other hand, Linnaeus himself appears to suggest in *Critica Botanica* (A.

Hort, The "Critica Botanica" of Linnaeus, English translation, 203. 1938), and Stearn in his introduction to the Ray Society facsimile of *Species Plantarum* (90, 93. 1957) has stated, that where a variety has been described within a species the typical element refers to the wild form, "the natural species," "natural form," "natural plant," or "normal form" of Linnaeus. This appears to be the usage that Linnaeus adopted in *Hortus Cliffortianus* (29, 30. 1737), where the first species described, *Dipsacus capitulis florum conicis*, consists of a typical element and three varieties ( $\alpha$ ,  $\beta$ ,  $\gamma$ ). The phrase name and synonymy of the typical element correspond to those of *D. fullonum* in *Species Plantarum*, and the phrase name and synonymy of var.  $\gamma$  correspond to var.  $\beta$  of *Species Plantarum*. At the end of the description is the observation, "Planta naturalis gaudet paleis calycinis, flosculos distinguentibus, fere erectis & mollibus; varietas autem ( $\beta$ ) paleis parum reflexis & rigidiusculis; haec autem ( $\gamma$ ) paleis apice reflexis, duris & hamatis; ista autem ( $\alpha$ ) foliis caulinis incisus a naturali differt planta."

It appears to be in agreement with Linnaeus' concept of species to regard the wild plant as the typical element of *Dipsacus fullonum*. This treatment also appears to be consistent with the International Code of Botanical Nomenclature (65. 1961): "In choosing a lectotype, any indication of intent by the author of a name should be given preference unless such indication is contrary to the protologue" and "If it can be shown that the element best fitting the protologue has been removed, it should be restored and treated as the lectotype." We are thus in agreement with those who apply the name *Dipsacus fullonum* to the wild teasel with erect receptacular bracts. In this circumstance Linnaeus' specimen of the wild teasel with erect receptacular bracts and labeled "*fullonum*" in Linnaeus' handwriting (Linnaean Herbarium, sheet 119.1) should be taken as the lectotype. The cultivated plant then bears the name *D. sativus*, if it is regarded as a distinct species.

#### DIPSACUS SATIVUS

Further confusion exists concerning the author responsible for the elevation of var. *sativus* to specific rank. A number of different authors, including F. A. Garsault (Fig. Pl. Anim. 2: tab. 249. 1764, and Traité Pl. Anim. 2: 160. 1767) have been credited with making the combination. Since Garsault did not consistently use binomials in these works, the combination can not be considered to have been published validly by him. The combination has also been erroneously attributed to F. A. Scholler (Fl. Barbiensis 47. 1775), who mentioned the name only incidentally under *Dipsacus fullonum*. Most authors have attributed the combination *D. sativus* to G. A. Honckeny (Vollst. Syst. Verz. Gewächse Teutschl. 1782). Jackson (Index Kewensis), Schinz & Thellung, and Mansfeld (see references cited under *D. fullonum*) cite p. 374 for the combination, while Bobrov (Flora URSS) gives p. 16. It has developed that Honckeny did indeed make the combination *D. sativus*

validly on page 374 of his very rare work of 1782,<sup>2</sup> although he later referred (Syn. Pl. Germania 2: 6.1792) to the cultivated teasel as *D. fullonum* and cited *D. sativus* C. Bauh. in synonymy, making no reference to his earlier work.

Several modern authors, including Clapham (*loc. cit.*) and Cronquist (*loc. cit.*) have treated the two elements of *D. fullonum* as subspecies. The correct subspecific combination *D. fullonum* L. subsp. *sativus* does not yet appear to have been published properly. Clapham cited Thellung as authority, but Thellung (Fl. Advent. Montpellier 490, 491, 680, 697. 1912) did not make this combination, although he suggested that *D. sativus* may perhaps be a subspecies of *D. fullonum* and included the epithet "*sativus*" in the index to his work at both specific and subspecific rank. Clapham can not be considered to have made a formal new combination either, for he does not cite the complete reference to the basionym as required by Art. 33, International Code of Botanical Nomenclature, 1961.

In conclusion, it appears that the nomenclature of these two species of *Dipsacus* may be summarized as follows:

***Dipsacus fullonum* Linnaeus, Sp. Pl. 1: 97. 1753.**

*D. sylvestris* Hudson, Fl. Anglica 49. 1762; Fernald, Gray's Man. Bot. ed. 8. 1347. 1950; Gleason, New Britton & Brown Illus. Fl. NE. U.S. 3: 309. 1951; Cronquist, Vasc. Pl. Pacif. NW. 4: 480. 1959.

***Dipsacus sativus* (L.) Honckeny, Vollst. Syst. Verz. Gewächse Teutschl. 1: 374. 1782.**

*D. fullonum*  $\beta$  Linnaeus, Sp. Pl. 1: 97. 1753.

*D. fullonum*  $\beta$  *sativus* Linnaeus, Sp. Pl. ed. 2. 2: 1677. 1763.

*D. fullonum*, sensu Hudson, Fl. Anglica 49. 1762, and many other authors, including all American workers.

<sup>2</sup>The authors wish to acknowledge the assistance of Mrs. Lazella Schwarten, Librarian of the Arnold Arboretum and of the Gray Herbarium, and that of Dr. R. K. Brummitt, Royal Botanic Gardens, Kew, for their help in trying to locate a copy of Honckeny's *Vollständiges systematisches Verzeichniss aller Gewächse Teutschlandes*. We are especially grateful to Professor K. H. Rechinger, Naturhistorisches Museum, Wien, who found a copy of this elusive work in the Austrian National Library and sent a photostat of the pages pertaining to *Dipsacus* (372-378).

In an earlier paper (Ferguson, Jour. Arnold Arb. 46: 229. 1965) C. Schkuhr (Bot. Handb. 1: 67. 1791) is incorrectly cited as the authority for the combination *Dipsacus sativus*, for at that time the synonymy in Honckeny's work of 1792 suggested that he had not made the combination earlier.